

1. H.A.V	2-6 weeks	1- Contamination Food & Water 2 Fecal-oral
2. H.B.V	2-6 Months	1- Body Fluids 2- Perinatal
3. H.C.V	6M	1- Blood to Blood 2- Sexual & Perinatal. less.
4. H.D.V	2-12 Weeks	1- Similar HBV 2- In people had HBV
5. H.I.V	6M-7Y 2Y- neonates	1- STI 2- Body fluids 3- Transplacental
6. Polio viruses		1- Fecal-Oral 2-
7. Coxsackie.V		1- Contact with HFMD 2- Saliva 3- blister fluid.
8. Echo viruses		1- Direct Contact Respiratory fluid 'hugging/kissing' 2- Stool
9. Rhinoviruses	2-4 days	1- Respiratory fluids
10. Rotavirus Adenovirus	1-4 days	1- Faeco-Oral route.
11. Rabies virus	2-16 Weeks	1- Droplets 2- Faeco-Oral 3- Contact 1- Saliva of Infected Animal 2- Corneal transplants.
12. Arbovirus.		1- Bloodsucking arthropods e.g. Mosquitoes/Ticks/Sand fly
13. Toga/Flavi.V		1- Mosquitoes.
14. Yellow fever		1- Mosquito Aedes africanus 2- Aedes aegypti
15. Dengue		1- Mosquito Aedes aegypti
16. Bunya viruses		1- Sand fly Phlebotomus Papatasi 2- Mosquitoes.
17. West Nile virus		1- Culex Mosquitoes malak kurati

Coxsackie viruses

- Type:- 1-Group A (24 types):- Myositis & flaccid paralysis, No lesion, fatal
 2-Group B (6 types):- focal Myositis & lesions CNS, heart, pancreas.
 Dis, Syndrome 1-Herpangina 2-HFMD 3-Acute hemorrhagic Conjunctivitis A
 4-Pleurodynia 5-Myocarditis & Pericarditis 6-Diabetes Mellitus-B
 7-Aseptic meningitis 8-Minor febrile illness

Treat/Vaccine No specific treatment & Vaccine

Prevention 1-Avoid direct contact HFMD, Stool, Saliva, blister fluid

Echoviruses.

Transmission Contact with 1-Direct contact ^① Respiratory fluids ^② hugging ^③ kissing ^④ Saliva
 2-Non-D.C ^① telephone ^② meals utensils 3-Infected child Poop change, diaper

Symptoms 1-Cough 2-Sore throat 3-Flu like symptoms 4-Rash 5-Croup

Dis 1-Aseptic meningitis 2-Common Cold 3-Gastroenteritis 4-A.H.C
 5-Febrile illness with or without Rash.

Diagnosis 1-Rectal 2-Stool 3-Throat 4-CSE - Culture

Treatment 1-No Treatment, Self limited for few days/longer weeks 2-Long-term Care
 for Its Disease. 3-Physical/Speech therapy.

Other Enteroviruses.

Serotype basis on Antibody neutralization tests.

1-Enterovirus 68 causes Pneumonia in children 2-E70 causes A.H.C

3-E71 Meningitis Encephalitis Paralytic like polio

Symptoms Fever Runny nose Sneezing Rash, Mouth blister

Treatment No specific Treatment for non-polio enterovirus / Treated Their illness / Sympt

Rhinoviruses.

Dis Upper Respiratory Tract Infection 'Common Cold' Cough, Fever, headache
 No viraemia. Self limited, Ig A, Interferon No Serum Ab, 100 Ag

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Adenoviruses.

- Cause** Latent infection in Adenoid & tonsillar tissue
- Types** 47 - human serotypes 12, 18, 31, tumor in newborn hamsters transformation
- Structure** ds DNA, Icosahedral, naked "Fiber"
- Dis** 1 Respiratory diseases 3, 4, 7, 21 2 Pharyngoconjunctival fever 3, 7, 14
3 Eye infections: 8, 9 4 Gastroenteritis & intussusception 40/41
5 A.H. Erythema 11, 21 6 Immuno compromised
- Diagnosis** 1 Isolation "sample virus" 2 a 4- Bld ↑ Ab
- Prevention** Living Attenuated vaccine
- Gene Therapy** used as gene delivery vehicles / Replication-defective virus.
lyse the Endosome after internalization & release DNA into Cytoplasm

Adenoassociated Viruses / Defective parvoviruses.

- 2nm Found in Adenovirus preparation malak kurati
- No replicate less Adenovirus is helper

Family	Envelop	DNA/RNA	Shape	Virus
Hepadnaviridae	Yes	d.S DNA	Icosahedral	1-HBV
Picornaviridae	No	S.S RNA	Icosahedral	1-HAV 2-Polio viruses 3-Enteroviruses 4-Rhinovirus
Flaviviridae	Yes	S.S RNA	Icosahedral	1-HIV 2-Yellow fever V 3-Dengue V 4-West Nile V 5-Japanese encephalitis V
Retroviridae	Yes	S.S RNA	Icosahedral	1-HIV 1/2 2-HTLV 1/2
Togaviridae	Yes	S.S RNA	Icosahedral	
Deltaviridae		S.S RNA		1-HDV
Rhabdoviridae	Yes	S.S RNA	Helical	1-Rabies V
Reoviridae	No	d.S RNA	Icosahedral	1-Rotavirus 2-Reovirus
Adenoviridae	No	d.S DNA	Icosahedral	
Bunyaviridae	Yes	S.S RNA	Icosahedral	Bunyavirus
Arbovirus Encephalitis	Yes	S.S RNA	Icosahedral	
Poxviridae	Yes	d.S DNA	Complex	malak-kurati

Rotavirus.

Family Reoviruses.

Dis Infantile Gastroenteritis.

Structure RNA Naked Difficult grown in Culture.

Pathogenic 1- I.P. - 1-4 days 2 Common in Children 6m-2y 3 Fecal-oral
4 Replicate in Vili $\rightarrow$ defect transport mechanisms. 5 Impaired Na & glucose Absorption.

Symptoms 1- Watery No blood diarrhoea 2 Vomiting 3 Dehydration 4 Acidosis 5 Shock.

Diagnosis 1- ELISA & RIA: Virus in Stool by kits 2 ELISA & Complement fixation $\uparrow$ Ab^{sera}
3- PCR & dot hybridization 4 Immunoelectron microscopy: Virus in Stool

Treatment 1- Replacement fluids 2 Restoration of electrolyte balance

Vaccine 1- Oral Living Attenuated Vaccine.

Rabies virus.

Structure: 1 RNA - RNA polymerase. 2 Spikes "glycoprotein" Ag

Infect all warm blood "dog / cattle" present in Saliva CNS

Biologic form 1 Street Vi: Nature / Peripheral inoculation $\rightarrow$ Encephalitis / Intra-muscular / Cerebral
2 Fixed Vi: No proliferate in Extraneural / Encephalitis intra Cerebral No peripherally

Pathogens: 1 bite "Saliva" 2 Multiplies locally 3 Travels via Peripheral nerves to CNS
4 Negri bodies in cytoplasm 5 CNS to peripheral nerves to Saliva
6- Cornea

Incubation 2-16 weeks 1 distance 2 Severity laceration & amount Virus

Control 1- Hyperimmune rabies serum 2 Dose.

Vaccines Inactivated rabies virus. 1- HDCV: grown in Normal fibroblast cell line

Human Inactivated by Beta-Propiolactone. 5 dose. ^{SS} Beta rhesus lung diploid cell culture
Purified chick embryo cell 2- Duck embryo. 23 Subcutaneous dose Allergic to Egg.

3- Nerve tissue: - brain infected Sheep. Inactivated by phenol / causes Encephalitis.

Vaccines Killed vaccines / Vaccinia Virus Carrying rabies glycoprotein gene.

Animal malak-kurat

Diagnosis 1 ↑ Liver enzyme 2 ELISA Ag, Ab 3-PCR DNA/polymerase
Antigen HBs Ag, HBc Ag, HBe Ag, Antibodies HBs Ab, HBe Ab, Ig M/G HBs
HBc Ab Ig M, Ig G 4-CBC

Treatment 1 Immunologic cure 2 Pegylated interferon alpha-2a 3 Entecavir
4 Tenofovir 5 Immune Globulin 6 Alpha interferon Chronic
Vaccine 1 Heptavax B 2 Recombivax / Post 1 HBIG 2 HB-Vaccine

H.C.V

Family Flavivirus
Genom RNA
Transmission 1 Blood to blood 2 Sexual difficult Perinatal
Symptoms 1 Loss of appetite 2 Fever 3 Joint Pain 4 Abdominal Pain 5 Dark Urin Jaundice
Dis 1 Acute HC 2 Chronic HC
No Transmite 1 Hugging 2 kissing 3 Coughing 4 Sharing Food/Utensils 5 Mosquito
Treatment 1 Ribavirin 2 DAAs Fully Remove HCV 3 Zepatier 4 Harvoni
5 Epclusa 6 Vosevi 7 Mavyret Can Cure Acute/Chronic
Diagnosis 1 Antibody HC 2 PCR genotype 3 Liver Enzyme 4 Ultrasound
Complication 1 Cirrhosis 2 Liver Cancer 3 Liver Transplant if untreated
Genotypes Determined by Blood Test / 7 genotype 67 subtypes / Choose Treatment
Genotype 1 2 3 pandemic 1a & 1b most common Quasi species Subtype

H.D.V

Family / Genom Deltaviridae RNA
it uses HBs Ag as its Envelope, Multiple only in Infected cell HBV
Diagnosis HDV + HBV > HBV
HDV - Ab / Ag 2 PCR - RNA
Prevention No specific Vaccine, HB Vaccine prevent HDV 0 malak kurati
2-12 weeks

H.A.V

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Family Picornaviridae 'Hepatovirus'

Type One Serotype only

Genome RNA

Transmission 1- Food & Water Contaminated 2- Fecal-oral 3- Saliva

Incubation 2-6 Weeks

Only Acute Viral Hepatitis.

Clinically 1- Raised $\uparrow$ bilirubin 2- Pale stool 3- Dark Urine 4- Jaundice

Laboratory 1- ELISA/RIA [HAV-IgM/IgG] 2- RT-PCR 3- EMicroscopy

Treatment No Treatment, Replacement fluid

Prevention Improved Sanitation, Food safety/Water, Personal hygiene

Vaccines 1- Inactivated Hepatitis A vaccines 2- No vaccines children less 1 year. A

H.B.V

Family Hepadnaviridae

Genome DNA

Pathogenesis Similar Retroviruses, Replicate by RNA intermediate & Integrate Host genome

Effects 1- Chronic hepatitis 2- Liver Cirrhosis 3- HCC

Incubation 2-6 Months

Transmission 1- Horizontal 2- Perinatal/Vertical 3- Transfusions

Symptoms 1- Joint pain 2- Vomiting 3- Dark Urine 4- Jaundice

Structure 1- Non infectious [HBsAg: Spheres & filaments] Lipid host without Viral nucleic acid: HBcAg, Core protein + Virally encoded Polymerase + Viral DNA genome.

HBsAg 1- HBsAg: Australia antigen, Surface Antigen, Current

2- HBcAg: Core Antigen, Active replication, Infections.

3- HBeAg: - part of core of Dane Particulate, Strongly, $\uparrow$ Infectious